

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

PARITY NETWORKS LLC,

Plaintiff,

v.

D-LINK CORPORATION,

Defendant.

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CIVIL ACTION NO. 6:20-cv-00093

JURY TRIAL DEMANDED

ORIGINAL COMPLAINT

Plaintiff Parity Networks LLC (“Plaintiff” or “Parity Networks”), by and through its attorneys, for its Original Complaint against D-Link Corporation (“Defendant” or “D-Link”), and demanding trial by jury, hereby alleges as follows:

I. NATURE OF THE ACTION

1. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 271, *et seq.*, to enjoin and obtain damages resulting from Defendant’s unauthorized use, sale, and offer to sell in the United States of products, methods, processes, services and/or systems that infringe Parity Networks’ United States patents, as described herein.

2. D-Link manufactures, provides, uses, sells, offers for sale, imports, and/or distributes infringing products and services; and encourages others to use its products and services in an infringing manner, including their customers, as set forth herein.

3. Parity Networks seeks past and future damages and prejudgment and post-judgment interest for D-Link’s past infringement of the Patents-in-Suit, as defined below.

II. PARTIES

4. Plaintiff Parity Networks is a limited liability company organized and existing under the laws of the State of Delaware. Parity Networks' registered agent for service of process in Texas is InCorp Services, Inc., 815 Brazos Street, Suite 500, Austin, Texas 78701.

5. On information and belief, Defendant D-Link is a corporation organized under the laws of Taiwan, with a place of business at D-Link Corporation No. 289, Xinhua 3rd Road, Neihu District, Taipei 11494, Taiwan.

III. JURISDICTION AND VENUE

6. This is an action for patent infringement arising under the Patent Laws of the United States, in particular 35 U.S.C. §271, 281, 283, 284, and 285. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §1331 and 1338(a).

7. Upon information and belief, Defendant transacts substantial business in the State of Texas and the Western District of Texas. Defendant, directly and through subsidiaries or intermediaries (including distributors, retailers, resellers and others), has purposefully and voluntarily placed one or more of their infringing products, as described below, into the stream of commerce with the expectation that these infringing products will be purchased and used by customers in the District. Defendant has committed acts of patent infringement within the District.

8. Defendant has also placed downstream products containing infringing components into the stream of commerce by shipping infringing products into Texas, knowing that they would be shipped into Texas, and/or knowing that these infringing products would be incorporated into other products that would be shipped into Texas.

9. On information and belief, Defendant interacts with distributors and customers who sell the infringing products into Texas, knowing that these customers will sell the infringing products into Texas, either directly or through intermediaries.

10. This Court has personal jurisdiction over Defendant because it has committed acts giving rise to this action within Texas and within this District. The Court's exercise of jurisdiction over Defendant would not offend traditional notions of fair play and substantial justice because Defendant has established minimum contacts with the forum with respect to both general and specific jurisdiction.

11. Venue is further proper as to Defendant D-Link, which is organized under the laws of Taiwan, in light of 28 U.S.C. § 1391(c)(3) which provides that "a defendant not resident in the United States may be sued in any judicial district, and the joinder of such a defendant shall be disregarded in determining where the action may be brought with respect to other defendants."

IV. FACTUAL ALLEGATIONS

PATENTS-IN-SUIT

12. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 6,252,848 (the "'848 Patent"), entitled "System Performance in a Data Network Through Queue Management Based on Ingress Rate Monitoring," issued on June 26, 2001.

13. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 7,002,958 (the "'958 Patent"), entitled "Method for Load-Balancing With FIFO Guarantees in Multipath Networks," issued on February 21, 2006.

14. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 7,103,046 (the "'046 Patent"), entitled "Method and Apparatus for Intelligent Sorting and Process Determination of Data Packets Destined to a Central Processing Unit of a Router or Server on a Data Packet Network," issued on September 5, 2006.

15. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 7,719,963 (the "'963 Patent"), entitled "System for Fabric Patent Control," issued on May 18, 2010.

16. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 6,553,005 (the “’005 Patent,” attached as Exhibit 1), entitled “Method and Apparatus for Load Apportionment among Physical Interfaces in Data Routers,” issued on April 22, 2003.

17. Together, the foregoing patents are referred to herein as the “Patents-in-Suit.” Parity Networks is the assignee of the Patents-in-Suit and has all rights to sue for infringement and collect past and future damages for the infringement thereof.

DEFENDANT’S ACTS

18. D-Link is a global provider of data networking products and solutions and provides hardware and software directed to switching and routing network data to its customers in the United States, including in this District. D-Link provides a variety of networking switches including “Fully Managed Switches [that] can be deployed as core, distribution, or access switches, featuring high port densities, stacking, and versatile management. They support a complex suite of Layer 2, Layer 2+ and Layer 3 switching functions.” <https://us.dlink.com/en/business/fully-managed-switches>.

19. In particular, D-Link makes, uses, sells, and offers for sale switches intended for business networking applications in at least the following series: DWS-3000; DXS-3400; DXS-3600; DGS-3120; DGS-3130; DGS-3600; DGS-3620; DGS-3630; DGS-6600; DES-3800; and 5000.

20. Certain of D-Link’s business-networking switches support quality of service (“QoS”) classification for queuing packets into specific categories. For example, the switches support 802.1X authentication, an IEEE standard for port-based network access control, for queuing packets according to category. Further, the switches are able to classify network traffic into categories corresponding to trust level and thereafter process that traffic based on the priority assigned to that trust level.

What is Quality of Service (QoS)

Explanation of Features

› Policing

- A given policy to prioritize or limit the maximum data rate of traffic.
- Policy can be port-based, flow-based, queue-based.

› Queuing

- Manages the data stored in device buffer memory.
- Decides the sequence of data forwarding.
- Allocates the buffer resource.

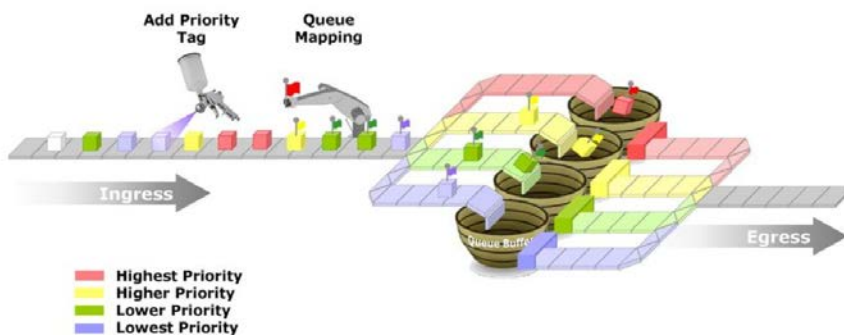
D-Link QoS Technology Brief, Arthur Chiang, Ethernet Switch Product Dept., January 2011, page 4, available at: <https://slideplayer.com/slide/12965694/>.

Prioritizing

Sequence of Packet Forwarding

› Priority Queues

- Switch will store all the packets into port egress buffer before transmitting it.
- Each egress buffer is divided into several priority queues and packets stored in higher queues will be served first.
- Generally speaking, packets with higher priority tag will be mapped to higher queues. However, it can be changed according to the policies of switch itself.



D-Link
Building Networks for People

Id. at 7.

Standard Image (SI) Features		
QoS (Quality of Service)	<ul style="list-style-type: none"> • 802.1p Quality of Service • 8 queues per port • Queue Handling <ul style="list-style-type: none"> - Strict - Weighted Round Robin (WRR) - Strict + WRR - Round Robin (RR) - Weighted Elastic Round Robin (WERR) • CoS based on <ul style="list-style-type: none"> - 802.1p Priority Queues - DSCP - IP address - MAC address - VLAN - IPv6 Traffic Class - IPv6 flow label - TCP/UDP port 	<ul style="list-style-type: none"> • Bandwidth Control <ul style="list-style-type: none"> - Port-based (Ingress/Egress, min. granularity 8 Kb/s) - Flow-based (Ingress/Egress, min. granularity 8 Kb/s) - Per queue bandwidth control (min. granularity 8 Kb/s) • Three Color Marker <ul style="list-style-type: none"> - trTCM - srTCM • Congestion Control <ul style="list-style-type: none"> - WRED • Support for following actions: <ul style="list-style-type: none"> - Remark 802.1p priority tag - Remark TOS/DSCP tag - Bandwidth Control - Committed Information Rate (CIR)

D-Link DXS-3600 Series Datasheet, page 5, available at: ftp://ftp2.dlink.com/PRODUCTS/DXS-3600-SERIES/REVB/DXS-3600-SERIES_DATASHEET_v12-11-13.pdf.

Software Features - All Models		
Standard Image (SI) Software Features		
<ul style="list-style-type: none"> • Ships with product • All models support the following features: 		
Quality of Service (QoS)	<ul style="list-style-type: none"> 802.1p Quality of Service 8 queues per port QoS based on <ul style="list-style-type: none"> • 802.1p Priority Queues • DSCP • IP address • MAC address • VLAN • IPv6 Traffic Class • IPv6 Flow Label • TCP/UDP port • Switch Port • Ether Type • ToS/IP Preference • Protocol Type Congestion Control <ul style="list-style-type: none"> • WRED 	<ul style="list-style-type: none"> Queue Handling <ul style="list-style-type: none"> • Strict • Weighted Round Robin (WRR) • Strict + WRR • Deficit Round Robin (DRR) • Weighted Deficit Round Robin (WDRR) Bandwidth Control <ul style="list-style-type: none"> • Port-based (Ingress/Egress, min. granularity 64 Kb/s) • Flow-based (Ingress/Egress, min. granularity 64 Kb/s) • Per queue bandwidth control (min. granularity 64 Kb/s) Support for following actions: <ul style="list-style-type: none"> • Remark 802.1p priority tag • Remark ToS/DSCP tag Committed Information Rate (CIR) Three Color Marker <ul style="list-style-type: none"> • trTCM • srTCM

D-Link DXS-3400 Series Datasheet, pages 4-5, available at: https://us.dlink.com/-/media/obu-content/us/datasheets/dxs/dxs-3400_reva_datasheet_111_en_us.pdf.

21. D-Link switches further support QoS features that are designed to minimize or avoid congestion in a switch. As reflected in the tables above, certain switches support weighted random early detection (“WRED”) and random early detection (“RED”) as part of their QoS features. RED and WRED are queuing disciplines that are designed to avoid congestion and prevent the switch’s buffer from filling up by dropping incoming packets based on how full a

queue is and specified minimum and maximum threshold values for queue length. This process is generally described with respect to one of D-Link's switches as reflected below:

WRED

Weighted Random Early Detection (WRED) is another implementation for QoS that will help the overall throughput for your QoS queues. Based on the egress queue of the QoS function set on the Switch, this method will analyze these packets and their QoS queue to determine if there will be an overflow of packets entering the QoS queues and consequentially, minimize the packet flow into these queues by dropping random packets.

WRED employs two methods of avoiding congestion within the QoS queue.

1. Every QoS queue has a minimum and a maximum level for acceptance of packets. Once the maximum threshold has been reached for this queue, the Switch will begin discarding all ingress packets, this minimizing the allotted bandwidth for QoS. When below the minimum threshold, the Switch will accept all ingress packets.
2. When the ingress packets are somewhere between the maximum and minimum queue, the Switch will use a slope probability function to determine a random method of dropping packets based on the maximum drop rate which specifies the drop probability when the queues reach maximum threshold. If queues are closer to the maximum threshold, the Switch will increase the discarding of random packets to even out the flow to the queues and avoid overflows to higher priority queues.

D-Link Web UI Reference Guide for DGS-3630 Series, page 442, available at: [http://ftp.dlink.ru/pub/Switch/DGS-3630-28PC/Description/DGS-3630_Series_A1_Web_UI_Reference_Guide_v2.00\(WW\).pdf](http://ftp.dlink.ru/pub/Switch/DGS-3630-28PC/Description/DGS-3630_Series_A1_Web_UI_Reference_Guide_v2.00(WW).pdf).

The fields that can be configured are described below:

Parameter	Description
Profile	Enter the WRED profile ID here. The range is from 1 to 128.
Packet Type	Select the packet type here. Options to choose from are TCP and Non-TCP . <ul style="list-style-type: none"> • TCP - Specifies the WRED drop parameters for the TCP packets to be set. • Non-TCP - Specifies the WRED drop parameters for non-TCP packets to be set.
Packet Colour	Select the packet color here. Options to choose from are Green , Yellow , and Red . <ul style="list-style-type: none"> • Green - Specifies the WRED drop parameters for green packets to be set. • Yellow - Specifies the WRED drop parameters for yellow packets to be set. • Red - Specifies the WRED drop parameters for red packets to be set.
Min Threshold	Enter the minimum threshold value here that will be used to start WRED dropping. The range is from 0 to 100.
Max Threshold	Enter the maximum threshold value here over which WRED will drop all packets destined for this queue. The range is from 0 to 100.
Max Drop Rate	Enter the maximum drop-rate value here. The range is from 0 to 14. This feature specifies the drop probability when the average queue size reaches the maximum threshold. When this value is zero, then the packet will not be dropped or remarked for ECN.


Id. at 443.

22. Certain D-Link switches support a routing technique known as Multiprotocol Label Switching (“MPLS”). MPLS is used to direct data from one node in a network to a subsequent node via the use of short labels that describe paths between subsequent nodes. These paths are known as label-switched paths (“LSP”). This approach is an alternative to using longer network addresses that identify endpoints in the network for routing purposes. D-Link describes MPLS and its use in one of its switches as described below:

Standard, Enhanced, and MPLS Images

The DGS-3630 Series is designed for use with three different software images: the Standard Image (SI), the Enhanced Image (EI), and the MPLS Image (MI)¹. The Standard Image provides core SMB and SME functionality such as L2 switching, entry-level routing, L2 multicast, advanced QoS, Operations, Administration, and Maintenance (OAM), and robust security features. The Enhanced Image supports all the features of the Standard Image in addition to full L3 routing for enterprise integration, including OSPF, BGP, VRF-Lite and L3 multicast. The MPLS Image offers all the features of the Standard and Enhanced Images in addition to VPN services for ISPs, including IS-IS and MPLS L2/L3 VPN. With multiple software images, only the required features need to be installed, providing a flexible approach to software management.

Source: DGS-3630 Series Layer 3 Stackable Managed Switches Datasheet, page 1, available at: <https://us.dlink.com/-/media/global-pdfs/global-datasheets/dgs3630seriesdatasheetv700ww.pdf>.




D-Link Certified Specialist

▪ **MPLS Configuration Guide**

Multiprotocol Label Switching (MPLS)

- Multi-Protocol Label Switching (MPLS) is a technology in which packets associated with a prefix-based Forwarding Equivalence Class (FEC) are encapsulated with a label stack and then switched along a label switched path (LSP) by sequence of label switch routers (LSRs). [RFC3031]

Source: D-Link Certified Specialist, MPLS Configuration Guide, version 1.0, page 5, available at: https://academy.dlink.com/temp/exam_Issue/230/MPLS%20Configuration%20Guide.pdf.




D-Link Certified Specialist
• **MPLS Configuration Guide**

Multiprotocol Label Switching (MPLS)

- Specifies mechanisms to manage traffic flows of various granularities, such as flows between different hardware, machines, or even flows between different applications
- Remains independent of the layer-2 and layer-3 protocols
- Provides a means to map IP addresses to simple, fixed-length labels used by different packet-forwarding and packet-switching technologies
- Interfaces to existing routing protocols, such as Open Shortest PathFirst (OSPF)

Source: *Id.* at 7.




D-Link Certified Specialist
• **MPLS Configuration Guide**

Multiprotocol Label Switching (MPLS)

- Instead of forwarding packets on a hop-by-hop basis, paths (label-switched paths) are established for a specific source-destination pairs
- As a result of a preset path, individual routing nodes do not need to do a lookup forwarding on the packets as they enter the router (less CPU-intensive operations)

Source: *Id.* at 8.




D-Link Certified Specialist
▪ **MPLS Configuration Guide**

Multiprotocol Label Switching (MPLS)

- MPLS assigns short labels to network packets that describe how to forward them through the network
- It offers two key functions
 - (1) Partitions the entire set of possible packets into a set of "Forwarding Equivalence Classes (FECs)," and then
 - (2) Maps each FEC to a next hop

Source: *Id.* at 9.



D-Link Certified Specialist
▪ **MPLS Configuration Guide**

MPLS Label Stack

- MPLS Label Stack
 - Label: The field contains the actual value for the label. This gives information on the protocol in the network layer and further information needed to forward the packet
 - CoS: Class of Service. The setting of this field affects the scheduling and/or discard algorithms which are applied to the packet as it is transmitted through the network
 - S: Bottom of the Stack, 1-bit field set to one for the last entry in the label stack and zero for all other label stack entries
 - TTL: Time to Live, 8-bit field used to encode a time to live value

Source: *Id.* at 35.

23. D-Link switches can also be configured to use a type of bonding known as link aggregation that utilizes a packet's characteristics, including source IP address and destination IP address, to choose a set of egress ports, such as those defined by a link aggregation group ("LAG"). Specifically, a hash is calculated that is used together with equal cost multi-pathing ("ECMP"), to determine which path a particular packet follows in the switch, as described below.

Link Aggregation

Understanding Port Trunk Groups

Port trunk groups are used to combine a number of ports together to make a single high-bandwidth data pipeline. The switch supports up to 32 port trunk groups with up to 12 ports in each group.

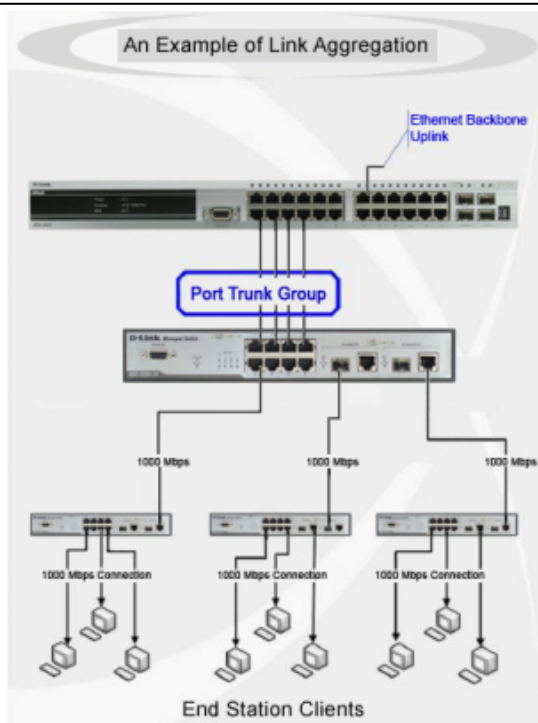


Figure 5-50 Example of Port Trunk Group

The switch treats all ports in a trunk group as a single port. Data transmitted to a specific host (destination address) will always be transmitted over the same port in a trunk group. This allows packets in a data stream to arrive in the same order they were sent.

Link aggregation allows several ports to be grouped together and to act as a single link. This gives a bandwidth that is a multiple of a single link's bandwidth.

Link aggregation is most commonly used to link a bandwidth intensive network device or devices, such as a server, to the backbone of a network.

The switch allows the creation of up to 32 link aggregation groups, each group consisting of up to 12 links (ports). Each port can only belong to a single link aggregation group.

All of the ports in the group must be members of the same VLAN, and their STP status, static multicast, traffic control; traffic segmentation and 802.1p default priority configurations must be identical. Port locking and 802.1X must not be enabled on the trunk group. Further, the LACP aggregated links must all be of the same speed and should be configured as full duplex.

Load balancing is automatically applied to the ports in the aggregated group, and a link failure within the group causes the network traffic to be directed to the remaining links in the group.

The Spanning Tree Protocol will treat a link aggregation group as a single link, on the switch level. On the port level, the STP will use the port parameters of the Master Port in the calculation of port cost and in determining the state of the link aggregation group. If two redundant link aggregation groups are configured on the Switch, STP will block one entire group; in the same way STP will block a single port that has a redundant link.

Web UI Reference Guide, DXS-3600 Series, D-Link, pages 131-32, available at: ftp://ftp2.dlink.com/PRODUCTS/DXS-3600-SERIES/REVB/DXS-3600_SERIES_REVB_WEB_UI_REFERENCE_GUIDE_v2.40_WW_EN.pdf.

ECMP Load Balancing Settings

This window is used to view and configure the load balancing hash key used to determine the next hop entry from the multiple paths destined for the same destination. When a route has multiple paths in the routing table going to the same destination, the system will take the next hop entry based on the hashing result. Use this window to define the data which will be included in the hash value computation. The source IP address is always included in the hash value computation.

To view the following window, click **L3 Features > ECMP Load Balancing Settings**, as shown below:

Figure 6-27 ECMP Load Balancing Settings Window

The fields that can be configured in **ECMP Load Balancing Settings** are described below:

Parameter	Description
Destination IP	Select this option to include the destination IP address in the hash value computation.
Source IP	Select this option to include the source IP address in the hash value computation.
CRC 32 Lower	Select this option to include the lower 5 bits of the CRC in the hash value computation.
CRC 32 Upper	Select this option to include the upper 5 bits of the CRC in the hash value computation.
TCP/UDP Port	Select this option to include the TCP/UDP port number in the hash value computation.

Id. at 187.

24. D-Link instructs its customers regarding the implementation and operation of the accused instrumentalities, including at <https://academy.dlink.com/>, <https://support.dlink.com/>, and <https://us.dlink.com/en/business/resources>.

25. On information of belief, Defendant D-Link also implements contractual protections in the form of license and use restrictions with its customers to preclude the unauthorized reproduction, distribution and modification of its software.

26. Moreover, on information and belief, Defendant D-Link implements technical precautions to attempt to thwart customers who would circumvent the intended operation of D-Link's products.

PRIOR KNOWLEDGE OF THE PATENTS-IN-SUIT

27. By letters dated October 5, 2016 and November 28, 2016, D-Link was provided and actually received notice of the Patents-in-Suit, and consequently has actual or constructive knowledge of each of them. True and correct copies of these letters are attached as **Exhibit 1** and **Exhibit 2** (the "Notice Letters").

28. Additionally, Defendant had knowledge of the Patents and the infringing conduct as early as the date when Parity effected service of the Complaint.

V. COUNTS OF PATENT INFRINGEMENT

COUNT ONE
INFRINGEMENT OF U.S. PATENT NO. 7,002,958

29. Parity Networks incorporates by reference its allegations in the preceding paragraphs as if fully restated in this paragraph.

30. Parity Networks is the assignee and owner of all right, title and interest to the '958 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

31. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '958 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '958 Patent. Defendant D-Link is thus liable for direct infringement of the '958 Patent pursuant to 35 U.S.C. § 271(a).

32. Exemplary infringing products include D-Link's DGS-3630 series of switches (e.g. the DGS-3630-52PC, DGS-3630-52TC, DGS-3630-28PC, DGS-3630-28SC and DGS-3630-28TC switches) which support MPLS, routing packets by accessing information in packet headers and using that accessed information as an index to determine a destination for the packet, allocating labels to packets, and accessing routing bias tables to establish label-switched paths.

33. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '958 Patent, including actively inducing infringement of the '958 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that D-Link knows or should know infringe one or more claims of the '958 Patent. D-Link instructs its customers to make and use the patented inventions of the '958 Patent by operating D-Link's products in accordance with D-Link's specifications. D-Link specifically intends its customers to infringe by implementing its switches to perform MPLS in an infringing manner, as set forth above.

34. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '958 Patent, including contributory infringement of the '958 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. D-Link knows that the infringing products (i) constitute a material part of the inventions claimed in the '958 Patent; (ii) are especially made or adapted to infringe the '958 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in its switches to perform MPLS in an infringing manner.

35. As a result of D-Link's infringement of the '958 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

COUNT TWO
INFRINGEMENT OF U.S. PATENT NO. 7,719,963

36. Parity Networks incorporates by reference its allegations in the preceding paragraphs as if fully restated in this paragraph.

37. Parity Networks is the assignee and owner of all right, title and interest to the '963 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

38. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '963 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '963 Patent. Defendant D-Link is thus liable for direct infringement of the '963 Patent pursuant to 35 U.S.C. § 271(a).

39. Exemplary infringing products include D-Link's DGS-3130 series of switches (e.g. DGS-3130-30TS, DGS-3130-30S, DGS-3130-30PS, DGS-3130-54TS, DGS-3130-54S, DGS-3130-54PS); DGS-3630 series of switches (e.g. the DGS-3630-52PC, DGS-3630-52TC, DGS-3630-28PC, DGS-3630-28SC and DGS-3630-28TC switches); DXS-3600 series of switches (e.g. DXS-3600-32S and DXS-3600-16S); 5000 series data center switches (e.g. DXS-5000-54S, DQS-5000-32S, DXS-5000-32Q28, and DXS-5000-54SQ28) which support using a WRED algorithm on packet queues to drop packets as a function of queue size (or buffer) in order to manage congestion in the switch.

40. On information and belief, at least since the filing of the Original Complaint, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '963 Patent, including actively inducing infringement of the '963 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that D-Link knows or should know infringe one or more claims of the '963 Patent. D-Link instructs its customers to make and use the patented inventions of the '963 Patent by operating D-Link's products in accordance with D-Link's specifications. D-Link specifically intends its customers to infringe by, among others, designing and fabricating its switches to use a WRED algorithm on packet queues to drop packets as a function of queue size (or buffer) in order to manage congestion in the switch.

41. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '963 Patent, including contributory infringement of the '963 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. D-Link knows that the infringing products (i) constitute a material part of the inventions claimed in the '963 Patent; (ii) are especially made or adapted to infringe the '963 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in switches to implement a WRED algorithm on packet queues to drop packets as a function of queue size (or buffer) in order to manage congestion in the switch.

42. As a result of D-Link's infringement of the '963 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

COUNT THREE
INFRINGEMENT OF U.S. PATENT NO. 6,252,848

43. Parity Networks incorporates by reference its allegations in the preceding paragraphs as if fully restated in this paragraph.

44. Parity Networks is the assignee and owner of all right, title and interest to the '848 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

45. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '848 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '848 Patent. Defendant D-Link is thus liable for direct infringement of the '848 Patent pursuant to 35 U.S.C. § 271(a).

46. Exemplary infringing products include D-Link's DGS-3130 series of switches (e.g. DGS-3130-30TS, DGS-3130-30S, DGS-3130-30PS, DGS-3130-54TS, DGS-3130-54S, DGS-3130-54PS); DGS-3630 series of switches (e.g. the DGS-3630-52PC, DGS-3630-52TC, DGS-3630-28PC, DGS-3630-28SC, and DGS-3630-28TC switches); DXS-3600 series of switches (e.g. the DXS-3600-32S and DXS-3600-16S switches); D-Link 5000 data center series of switches (e.g. the DXS-5000-54S, DQS-5000-32S, DXS-5000-32Q28, and DXS-5000-54SQ28 switches); DXS-3400 series of switches (e.g. the DXS-3400-24SC and DXS-3400-24TC switches); DGS-3120 series of switches (e.g. the DGS-3120-24PC, DGS-3120-24TC, DGS-3120-48PC, and DGS-3120-

48TC switches); and DGS-3620 series of switches (e.g. the DGS-3620-28TC, DGS-3620-28SC, DGS-3620-28PC, DGS-3620-52T, and DGS-3620-52P switches). These products include multiple ingress ports with output queues and those ingress ports are configured to receive packets from multiple ingress flows and monitor their characteristics. Further, these products mark packets based on criteria including the ingress flow rate and the flow profile and drop packets based on drop functions and a set lower threshold.

47. On information and belief, at least since the filing of the Original Complaint, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '848 Patent, including actively inducing infringement of the '848 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that D-Link knows or should know infringe one or more claims of the '848 Patent. D-Link instructs its customers to make and use the patented inventions of the '848 Patent by operating D-Link's products in accordance with D-Link's specifications. D-Link specifically intends its customers to infringe by, among others, implementing software on its switches to configure class-of-service ("CoS") and/or QoS components to classify, police, shape, and mark traffic in an infringing manner.

48. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '848 Patent, including contributory infringement of the '848 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. D-Link knows that the infringing products (i) constitute a material part of the inventions claimed in the '848 Patent; (ii) are especially

made or adapted to infringe the '848 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in its switches to implement CoS and QoS components to classify, police, shape, and mark traffic in an infringing manner.

49. As a result of D-Link's infringement of the '848 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

COUNT FOUR
INFRINGEMENT OF U.S. PATENT NO. 7,103,046

50. Parity Networks incorporates by reference its allegations in the preceding paragraphs as if fully restated in this paragraph

51. Parity Networks is the assignee and owner of all right, title and interest to the '046 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

52. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '046 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '046 Patent. Defendant D-Link is thus liable for direct infringement of the '046 Patent pursuant to 35 U.S.C. § 271(a).

53. Exemplary infringing products include D-Link's DXS-3400 series of switches, DWS-3000 series of switches, and DXS-3600 series of switches (e.g. DXS-3600-32S and DXS-3600-16S). These products include one or more packet processors that categorize packets into

categories based on the source of the packet and the packets are placed in a queue and processed by a CPU based on a priority of those categories.

54. On information and belief, at least since the filing of the Original Complaint, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '046 Patent, including actively inducing infringement of the '046 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that D-Link knows or should know infringe one or more claims of the '046 Patent. D-Link instructs its customers to make and use the patented inventions of the '046 Patent by operating D-Link's products in accordance with D-Link's specifications. D-Link specifically intends its customers to infringe by, among others, designing and fabricating its switches to utilize one or more packet processors that categorize packets into categories based on the source of the packet, place the packets into queues, and process the packets via a CPU based on a priority of those categories.

55. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '046 Patent, including contributory infringement of the '046 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. D-Link knows that the infringing products (i) constitute a material part of the inventions claimed in the '046 Patent; (ii) are especially made or adapted to infringe the '046 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in its switches to utilize one or more packet processors that categorize packets into categories based on the source

of the packet, place the packets into queues, and process the packets via a CPU based on a priority of those categories.

56. As a result of D-Link's infringement of the '046 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

COUNT FIVE
INFRINGEMENT OF U.S. PATENT NO. 6,553,005

57. Parity Networks incorporates by reference its allegations in the preceding paragraphs as if fully restated in this paragraph

58. Parity Networks is the assignee and owner of all right, title and interest to the '005 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

59. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '005 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '005 Patent. Defendant D-Link is thus liable for direct infringement of the '005 Patent pursuant to 35 U.S.C. § 271(a).

60. Exemplary infringing products include D-Link's DXS-3600 series of switches (e.g. DXS-3600-16S and DXS-3600-32S); DGS-3630 series of switches (e.g. DGS-3630-52PC, DGS-3630-52TC, DGS-3630-28PC, DGS-3630-28SC, and DGS-3630-28TC); DGS-6600 chassis-based series of switches (e.g. DGS-6604 and DGS-6608); DGS-3600 series of switches (e.g. DGS-3627, DGS-3627G, and DGS-3650); DGS-3620 series of switches (e.g. DGS-3620-28TC, DGS-3620-28SC, DGS-3620-28PC, DGS-3620-52T, and DGS-3620-52P); and DGS-3130 series of

switches (e.g. DGS-3130-30TS, DGS-3130-30S, DGS-3130-30PS, DGS-3130-54TS, DGS-3130-54S, and DGS-3130-54PS). These products use link aggregation, equal-cost multi-path routing, and hashing functions to determine the route and egress port used by particular packets such that packets with common source/destination address pairs use a common egress port.

61. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '005 Patent, including actively inducing infringement of the '005 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that D-Link knows or should know infringe one or more claims of the '005 Patent. D-Link instructs its customers to make and use the patented inventions of the '005 Patent by operating D-Link's products in accordance with D-Link's specifications. D-Link specifically intends its customers to infringe by implementing among others, link aggregation, equal-cost multi-path routing, and hashing functions to determine the route and egress port used by particular packets such that packets with common source/destination address pairs use a common egress port.

62. On information and belief, Defendant D-Link, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '005 Patent, including contributory infringement of the '005 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. D-Link knows that the infringing products (i) constitute a material part of the inventions claimed in the '005 Patent; (ii) are especially made or adapted to infringe the '005 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in its switches to

implement, among others, link aggregation, equal-cost multi-path routing, and hashing functions to determine the route and egress port used by particular packets such that packets with common source/destination address pairs use a common egress port.

63. As a result of D-Link's infringement of the '005 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

VI. WILLFUL INFRINGEMENT

64. Plaintiff realleges and incorporates the preceding paragraphs herein.

65. As set forth above and in Exhibits 1 and 2, Plaintiff's representatives sent D-Link the Notice Letters that provided actual notice of infringement of the Patents-in-Suit.

66. Defendant nonetheless continued to make, use, sell and/or import infringing products despite knowing that its actions constituted infringement of a valid patent.

67. Defendant has knowingly or with reckless disregard willfully infringed one or more of the foregoing Patents-in-Suit. Defendant has thus had actual notice of infringement of one or more of the Patents-in-Suit, has continued to infringe and engaged in egregious conduct, including through failing to substantively respond to Plaintiff's repeated efforts to discuss a license outside the context of litigation. Defendant has taken the foregoing actions despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights.

68. This objective risk was either known or so obvious that it should have been known to Defendant. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. § 284.

VII. JURY DEMAND

69. Plaintiff Parity Networks demands a trial by jury of all matters to which it is entitled to trial by jury, pursuant to FED. R. CIV. P. 38.

VIII. PRAYER FOR RELIEF

WHEREFORE, Parity Networks prays for judgment and seeks relief against Defendant as follows:

- A. That the Court determine that one or more claims of the Patents-in-Suit is infringed by Defendant D-Link, either literally or under the doctrine of equivalents;
- B. That the Court award damages adequate to compensate Parity Networks for the patent infringement that has occurred, together with prejudgment and post-judgment interest and costs, and an ongoing royalty for continued infringement;
- C. That the Court award enhanced damages pursuant to 35 U.S.C. §284; and
- D. That the Court award such other relief to Parity Networks as the Court deems just and proper.

DATED: February 7, 2020

Respectfully submitted,

/s/ Andrew G. DiNovo

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